# MATERIAL SAFETY DATA SHEET

## 1. SUBSTANCE AND SOURCE IDENTIFICATION

**National Institute of Standards and Technology**
**Standard Reference Materials Program**
**100 Bureau Drive, Stop 2300**
**Gaithersburg, Maryland 20899-2300**

**RM Number: 8539**
**MSDS Number: 8539**
**RM Name: NBS 22 Oil**
**(Carbon and Hydrogen in Oil)**
**Date of Issue: 06 February 2013**

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**1-800-424-9300 (North America)**
**+1-703-527-3887 (International)**

**Description:** This Reference Material (RM) is intended for the use in developing and validating methods for measuring relative differences in carbon (C) and hydrogen (H) isotope-number ratios. A unit of RM 8539 consists of one ampoule containing approximately 1 mL of oil.

**Substance:** Heavy Crude Oil

**Other Designation:** Crude Oil (petroleum; petroleum crude; coal oil; crude oil; rock oil)

## 2. HAZARDS IDENTIFICATION

**NFPA Ratings (Scale 0–4):** Health = 1 Fire = 2 Reactivity = 0

**NOTE:** Crude Oil is a complex, variable mixture that has been studied as a whole and the health hazard and physical properties of the mixture is reported in this MSDS.

**Major Health Hazards:** Irritation.

**Physical Hazards:** Combustible liquid and vapor.

**Potential Health Effects (Acute and Chronic):**

**Inhalation:** Short-term acute exposure: irritation, headache, drowsiness, dizziness, loss of coordination; Long-term chronic exposure: irritation.

**Skin Contact:** Short-term acute exposure: irritation; Long-term chronic exposure: irritation, skin disorders, rash, possible cancer hazard[(a)].

**Eye Contact:** Shot-term acute exposure: irritation; Long-term chronic exposure: irritation, conjunctivitis.

**Ingestion:** May cause nausea vomiting, diarrhea, other gastrointestinal disturbances, aspiration to the lungs may cause pneumonitis.

**Listed as a Carcinogen/Potential Carcinogen**

| | Yes | No |
|---|---|---|
| National Toxicology Program (NTP) Report on Carcinogens | | X |
| International Agency for Research on Cancer (IARC) Monographs | | X[(b)] |
| Occupational Safety and Health Administration (OSHA) | | X |

[(a)]European Commission (EC) states crude oil may cause cancer (see "Sections 3 and 15").
[(b)]Crude oils are listed by IARC as a Group 3 Carcinogen – *not classifiable as its carcinogenicity to humans.*

## 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

| Component | CAS Number | EC Number (EINECS) | Nominal Concentration (%) |
|---|---|---|---|
| Crude Oil | 8002-05-9 | 232-298-5 | 100 % |

**Note:** There may be trace amounts of hydrogen sulfide generated due to the sulfur content in the crude oil. There is not a direct correlation between hydrogen sulfide generation and the total sulfur content listed on the Report of Investigation.

**EC Classification:** T

**EC Risk (R No.):** R45.

**EC Safety (S No.):** S45, S53.

**EC Risk/Safety Phrases:** See Section 15, "Regulatory Information".

## 4. First Aid Measures

**Inhalation:** If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration by qualified personnel. Seek immediate medical attention.

**Skin Contact:** Rinse affected area with soap and water for at least 15 minutes. Seek medical assistance if necessary.

**Eye Contact:** Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

**Ingestion:** If a large amount is swallowed, seek medical attention.

## 5. Fire Fighting Measures

**Fire and Explosion Hazards:** Moderate fire hazard. Vapor/air mixtures are explosive above flash point.

**Extinguishing Media:** Regular dry chemical, carbon dioxide, fine water spray, regular foam.

**Fire Fighting:** Avoid inhalation of combustion by-products.

**Flash Point (°C):** 70 (158 °F)

**Method Used:** Not listed.

**Autoignition Temp. (°C):** >400 (752°F)

**Flammability Limits in Air**

**UPPER (Volume %):** 0.6 %
**LOWER (Volume %):** 15 %

**Products of Combustion:** Thermal decomposition may release hazardous or toxic gases (see Section 10 "Stability and Reactivity").

## 6. Accidental Release Measures

**Occupational Release:** Absorb with sand or other non-combustible material and collect in appropriate container for proper disposal.

**Disposal:** Refer to Section 13, "Disposal Considerations".

## 7. Handling and Storage

**Storage:** Store and handle in accordance with all current regulations and standards.

**Safe Handling Precautions:** See Section 8, "Exposure Controls and Personal Protection".

## 8. Exposure Controls and Personal Protection

**Exposure Limits for Crude Oil:** No OSHA permissible exposure limits established.

NIOSH (TWA): 350 $mg/m^3$
NIOSH (Ceiling): 1800 $mg/m^3$ (15 min)
NIOSH (IDLH): 1100 $mg/m^3$ (10 %LEL)

**Ventilation:** Local exhaust ventilation system.

**Respirator:** If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29 CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

**Eye Protection:** Wear safety goggles. An eye wash station and drench shower should be readily available near the handling and use areas.

**Personal Protection:** Chemically resistant gloves and clothing are recommended.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance and Odor:** Yellow to black liquid, odor may vary

**Molecular Formula:** Not applicable.

**Density:** Not available.

**Specific Gravity (water = 1):** 0.78 – 0.92

**Water Solubility:** Insoluble.

## 10. STABILITY AND REACTIVITY

**Stability:** X Stable ____ Unstable

Stable at normal temperature and pressure.

**Conditions to Avoid:** Avoid heat, flames, sparks, and other ignition sources. Avoid contact with incompatible materials. Containers may rupture or explode if exposed to heat.

**Incompatible Materials:** Oxidizing materials.

**Fire/Explosion Information:** See Section 5, "Fire Fighting Measures".

**Hazardous Decomposition:** Oxides of sulfur and carbon.

**Hazardous Polymerization:** ____ Will Occur X Will Not Occur

## 11. TOXICOLOGICAL INFORMATION

**Route of Entry:** X Inhalation X Skin X Ingestion

**Toxicity Data:**

Rat: Oral $LD_{50}$: >4300 mg/kg

Rabbit: Dermal $LD_{50}$: >2000 mg/kg

**Health Effects:** See Section 2, "Hazards Identification" for potential health effects.

**Target Organs:** Respiratory tract, skin and eyes.

**Mutagen/Teratogen**

Registry of Toxic Effects of Chemical Substances (RTECS) publishes the following endpoints on mutagenic effects: Mouse: 7.2 g/kg; 1 mg/plate Salmonella typhimurium (-S9).

RTECS publishes the following endpoints on reproductive effects: Rat, skin: 10 g/kg TDLo [pregnant 0-19 day(s)].

**Medical Conditions Generally Aggravated by Exposure:** Allergies, respiratory disorders, and skin disorders.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity Data**

Aquatic Toxicity - Fish: steelhead trout (*Salmo gairdneri*), $LC_{50}$: 258 mg/L static (96 h).

Aquatic Toxicity - Invertebrate: water flea (*Daphnia magna*), $EC_{50}$: 36 mg/L (24 h); water flea (*Daphnia magna*), $EC_{50}$: <0.26 mg/L static (48 h).

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal:** Dispose in accordance with federal, state, and local regulations.

## 14. TRANSPORTATION INFORMATION

**U.S. DOT and IATA:** Not regulated by DOT or IATA.

## 15. REGULATORY INFORMATION

**U.S. REGULATIONS**

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.
SARA Title III Section 302 (40 CFR 355.30): Not regulated.
SARA Title III Section 304 (40 CFR 355.40): Not regulated.
SARA Title III Section 313 (40 CFR 372.65): Not regulated.
OSHA Process Safety (29 CFR 1910.119): Not regulated.
SARA Title III Sections 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

| | |
|---|---|
| ACUTE HEALTH: | Yes |
| CHRONIC HEALTH: | Yes |
| FIRE: | Yes |
| REACTIVE: | No |
| PRESSURE: | No |

**STATE REGULATIONS**

California Proposition 65: Not regulated.

**CANADIAN REGULATIONS**

WHMIS Information: Not provided for this information.

**EUROPEAN REGULATIONS**

**EC Classification:** Toxic.

**EC Risk Phrases:** R45 – May cause cancer.

**EC Safety Phrases:**

S45 – In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S53 – Avoid exposure - obtain special instructions before use.

**NATIONAL INVENTORY STATUS**

**U.S. Inventory (TSCA):** Crude Oil listed.

**TSCA 12(b), Export Notification:** Not listed.

## 16. OTHER INFORMATION

**Sources:** ChemADVISOR, MSDS *Petroleum-Crude Oil (Untreated and Mildly-Treated)*, 10 Jun 2011.